

LILIALES OF OHIO.

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In this study it has been my aim to arrange the species belonging to the Liliales of Ohio in a phyletic series and to make such keys as are needed for the easy identification of those species known to occur within the limits of the state. The distribution given is based on specimens in the state herbarium at the Ohio State University. It is known that this distribution is not complete, but it was thought best to confine the list to specimens at hand in order that it may be readily verified and that botanists of the state may be able to see what is needed to make the herbarium more complete.

LILIIFLORAE.

Herbs, sometimes shrubs, lianas or trees, usually with prominent flowers, having showy petals or staminodes; flowers hypogynous or epigynous, solitary or clustered, pentacyclic, trimerous, usually bisporangiate, actinomorphic in the lower forms, but zygomorphic in the higher; carpels 3 or rarely 2, united.

LILIALES.

Herbs, shrubs, lianas or trees, usually with showy flowers; flowers hypogynous, usually pentacyclic, mostly actinomorphic; bisporangiate, monocious or diecious; endosperm mealy, horny or fleshy.

Key to the Families.

1. Perianth not chaff-like and the flowers not in dense scaly heads; at least the inner whorl of the perianth petal-like; perianth segments sometimes united. 2.
1. Perianth glumaceous; or partly glumaceous with the flowers in dense scaly heads or spikes. 5.
2. Flowers usually bisporangiate; if monosporangiate then not with tendrils and flowers not in umbels. 3.
2. Flowers monosporangiate, umbellate; plants usually with tendrils, often woody. *Smilacaceæ*.
3. Perianth of similar, mostly colored, persistent segments are of 3 green sepals and 3 colored, withering persistent petals; (rarely a 4-parted perianth). *Liliaceæ*.
3. Perianth of similar, mostly colored, deliquescent petals or a six-parted tubular, ephemeral perianth. 4.
4. Perianth tubular, six-parted; aquatic herbs. *Pontederiaceæ*.
4. Perianth usually of 3 green sepals and 3 colored, deliquescent petals; terrestrial herbs. *Commelinaceæ*.
5. Inflorescence paniculate or capitate, always with leaf-like bracts at the base; perianth of similar segments. *Juncaceæ*.
5. Inflorescence in dense heads or spikes, without leaf-like bracts at the base. 6.
6. Ovary unilocular; flowers bisporangiate. *Xyridaceæ*.
6. Ovary 2-3-locular; flowers monosporangiate. *Eriocaulaceæ*.

LILIACEAE. Lily Family.

Herbs, rush-like herbs, woody plants; terrestrial, usually with prominent flowers, solitary or clustered, flowers hypogynous, mostly actinomorphic; perianth segments all colored alike or differentiated into a green calyx and colored corolla; fruit a loculicidal or septicidal capsule or a berry.

Sub-families.

1. Stem erect, occasionally short, rarely with a rhizome, never with a bulb; anthers introrse; fruit a capsule or berry; flowers bisporangiate or monosporangiate. *Dracænataë.*
1. Stems with rhizomes, corms or bulbs. 2.
2. Fruit a capsule. 3.
2. Fruit a fleshy berry, imperfect in *Trillium*; flowers bisporangiate. *Convallariataë.*
3. Capsule usually loculicidal; plants mostly bulbous; flowers bisporangiate; anthers mostly introrse. *Liliataë.*
3. Capsule mostly septicidal; plants rarely bulbous; bisporangiate, imperfectly bisporangiate, imperfectly monocious, monocious, or diecious; anthers mostly extrorse. *Melanthataë.*

Key to the Genera of Liliaceæ.

1. Leaves in 1 or 2 whorls of from 3-9 leaves, on the flowering stem; flowers single or umbellate. 2.
1. Leaves alternate or opposite or occasionally in several whorls, often basal. 3.
2. Leaves three, flowers solitary. *Trillium.* (17)
2. Leaves in two whorls; flowers in umbels. *Medeola.* (18)
3. Flowers in the axils of the leaves, either solitary or clustered. 4.
3. Flowers terminal or scapose, solitary or clustered. 7.
4. Leaves minute bracts, phylloclades needle-like. *Asparagus.* (26)
4. Leaves ordinary, not reduced to bracts. 5.
5. Flowers solitary. 6.
5. Flower clusters umbellate, consisting of 2 or more flowers. *Salomonina.* (21)
6. Leaves long-acuminate, rounded, clasping, membranous. *Streptopus.* (19)
6. Leaves oblong-lanceolate, mostly sessile or perfoliate. *Uvularia.* (10)
7. Perianth segments united. 8.
7. Perianth segments separate. 11.
8. Perianth segments 4-6 in. long; flowers bright yellow or orange. *Hemerocallis.* (4)
8. Perianth segments less than $\frac{1}{2}$ in. long; flowers white, blue or pale yellow-green. 9.
9. Leaves narrow, linear, coming from a bulb; flowers blue, rarely pinkish, small, in a dense raceme. *Muscari.* (8)
9. Leaves lanceolate or broadly lanceolate. 10.
10. Scape sheathed by the bases of the 2 or 3 leaves; flowers white and sweet-smelling. *Convallaria.* (25)
10. Scape much exceeding the many radical leaves; flowers yellow or white. *Alettris.* (9)
11. Flowers single, terminal; scape with two oblong or oblong-lanceolate leaves. *Erythronium.* (3)
11. Flowers in clusters of 2 or more, or if single then the stems leafy. 12.
12. Flowers in definite umbels or 1-3 at the end of the flowering branch. 13.
12. Flowers in corymbs, panicles, racemes or spikes. 17.

13. Leaves linear, terete, or elliptic-lanceolate; if elliptic-lanceolate then flowers appearing before the leaves; odor pungent. *Allium*. (5)
13. Leaves ovate, ovate-lanceolate, or lanceolate. 14.
14. Flower stalk leafy at the base, peduncle scapose. *Clintonia*. (24)
14. Flower stalk leafy to the top. 15.
15. Anthers versatile, styles united, stigma 3-lobed. *Lilium*. (2)
15. Anthers not versatile, styles separate above the middle. 16.
16. Leaves long-acuminate, plant finely pubescent; perianth segments $\frac{3}{4}$ in. long, flowers usually in 2's, sometimes from 1-3, greenish. *Disporum*. (20)
16. Leaves acute, plants glabrous or somewhat pubescent on the under side of the leaves when young; perianth segments about 1 in. long, flowers usually single, yellow or greenish-yellow. *Urtularia*. (10)
17. Leaves not grass-like, but broad-ovate, oval or lanceolate. 18.
17. Leaves grass-like or sword-shaped, occasionally fleshy, sometimes 1 in. or more broad. 21.
18. Flower cluster a spike of staminate or carpellate flowers; diocious. *Chamaelirion*. (15)
18. Flowers in simple racemes at the end of leafy branches; or if in a compound raceme then without leafy bracts. 19.
18. Flowers in a compound raceme with leafy bracts, or in a closely appressed panicle; leaves 10-14 in. long, oval to oblong. *Veratrum* (12)
19. Perianth 6-parted, stamens 6. 20.
19. Perianth 4-parted, stamens 4, plants small, leaves usually 2. *Unifolium*. (23)
20. Flowers large and showy, red, yellow or orange. *Lilium*. (2)
20. Flowers small, greenish. *Vagnera*. (22)
21. Flowers in simple racemes or corymbose. 22.
21. Flowers in branched racemes or panicles. 24.
22. Flowers involucrate with 3 bractlets; plants not bulbous. *Tofieldia*. (16)
22. Flowers not involucrate; plants bulbous. 23.
23. Flowers numerous, filaments filiform. *Quamasia*. (6)
23. Flowers usually less than 7, filaments flattened. *Ornithogalum*. (7)
24. Leaves 1 in. wide or more, pubescent or roughened. 25.
24. Leaves $\frac{1}{2}$ in. or less wide, glabrous. 26.
25. Flowers large, showy, white; segments not clawed, 1-1 $\frac{1}{2}$ long; leaves rigid or sword-shaped. *Yucca*. (1)
25. Flowers smaller, greenish-white, segments clawed; plant pubescent. *Melanthium*. (11)
26. Perianth segments acute, bearing 1 or 2 glands or a spot. *Zygadenus*. (13)
26. Perianth segments acuminate not gland-bearing. *Stenanthium*. (14)

Dracænataë.

1. *Yucca* L. *Yucca*.

Stems woody, bearing evergreen, stiff, linear leaves and having a panicle of nodding, showy, white flowers. Perianth of six ovate or ovate-lanceolate segments; stamens shorter than the perianth; anthers small and versatile.

***Yucca filamentosa* L.** Adam's-needle. Stem short; leaves evergreen and narrowed above, acuminate and sharp pointed, $\frac{3}{4}$ -2 in. wide, filiferous on the margin; panicle large and densely flowered, on a scape 1-9 feet high; perianth segments 1-2 inches long; fruit an erect capsule, $\frac{3}{4}$ in. thick. Escaped in Franklin County.

*Liliatæ.*2. *Lilium* L. Lily.

Tall bulbous herbs with short rhizomes and simple, leafy stems; flowers erect or drooping, showy, bisporangiate; perianth funnel form of 6 separate, spreading or recurved segments, all alike, or nearly so, nectar bearing; stamens 6, extrorse; anthers, versatile; style elongated; stigma 3 lobed; capsule loculicidal.

1. Perianth segments not clawed, flowers drooping or spreading. 2.
1. Perianth segments narrowed into long claws, flowers erect. 3.
2. Leaves smooth, perianth segments recurved. *L. superbum*.
2. Leaves roughened or tuberculate on the veins beneath; perianth segments recurved or spreading. *L. canadense*.
3. Leaves mostly whorled, lanceolate or linear lanceolate. *L. philadelphicum*.
3. Leaves, all but the uppermost, scattered, narrowly linear. *L. umbellatum*.

1. *Lilium superbum* L. Turk's-cap Lily. Stem 2-7½ feet high; leaves lanceolate, smooth, acuminate at both ends, lower leaves whorled; one-to-many-flowered, flowers drooping or spreading, orange, yellow-orange or rarely red, purple spotted, long peduncled, forming large panicles; perianth segments recurved. In meadows and marshes. Reported for Erie County. Mosley's herbarium.

2. *Lilium canadense* L. Canada Lily. Stem 2-6 feet high; leaves remotely whorled, lanceolate, 3 nerved, roughened or tuberculate on the veins beneath; flowers drooping or spreading, long peduncled, yellow or orange, usually spotted with brown; perianth segments recurved or spreading. In swamps or meadows. General.

3. *Lilium philadelphicum* L. Philadelphia Lily. Stem 1½-3 feet high; leaves linear-lanceolate, mostly whorled; flowers 1-3, erect, reddish orange, spotted with purple inside; perianth segments narrowed into long claws. Dry or sandy soil. Fulton, Lucas, Sandusky, Erie.

4. *Lilium umbellatum* Pursh. Western Red Lily. Similar to *L. philadelphicum*, but more slender; leaves, all but the uppermost scattered, narrowly linear; flowers 1-3, red, orange or yellow, spotted below; erect, perianth segments narrowed into claws, shorter than the blade. In dry soil on prairies. Stark County.

3. *Erythronium* L. Dog-tooth Lily.

Nearly stemless herbs arising from a deep bulb, stem bearing two smooth, spotted leaves with sheathing petioles and one nodding flower at the top; perianth of 6 lanceolate, recurved or spreading divisions; anthers oblong-linear, style elongated; capsule obovoid, contracted near the base.

1. Flowers yellow; stigmas very short. *E. americanum*.
1. Flowers white or pinkish white; stigmas longer, spreading and more recurved. *E. albidum*.

1. **Erythronium americanum** Ker. Yellow Dog-tooth Lily. A bulbous herb with green leaves mottled with purple and white; perianth yellow; style club-shaped; stigmas 3, united. In woods and thickets. General.

2. **Erythronium albidum** Nutt. White Dog-tooth Lily. Leaves somewhat narrower than the preceding species, not so much spotted; perianth white, pinkish or bluish-pink; stigmas spreading. General.

4. **Hemerocallis** L. Day-lily.

Showy perennials with fibrous, fleshy roots, and two-ranked, linear leaves at the base of the tall scapes. Scape many flowered, each flower having a bract and remaining open but for one day; perianth funnel-form, the lobes longer than the tube; stamens united with the tube, anthers introrse, filaments long and thread-like; style long, stigma simple.

1. **Hemerocallis fulva** L. Common Day-lily. Scape 3-6 feet tall; leaves channeled; flowers 6-18, short pedicelled, tawny orange. Escaped. General.

5. **Allium** L. Onion. Leek. Garlic.

Herbs with alliaceous odor, arising from solitary or clustered bulbs. Leaves narrowly linear, or rarely lanceolate; scape simple and erect; flowers small, in umbels; perianth white, pink, purple, green; parts distinct, or united at the very base; style persistent, and thread-like; capsule lobed; seeds black.

1. Leaves oblong-lanceolate, not present at the time of flowering; capsule strongly 3-lobed. *A. tricoccum*.

1. Leaves linear or elongated, present at the time of flowering. 2.

2. Leaves hollow, terete or nearly so. 3.

2. Leaves solid. 4.

3. Stem leafy to above the middle; leaves thread-like, grooved down the upper side. *A. vineale*.

3. Stem leafy only near the base; leaves usually broad, not definitely grooved, flowers white. *A. cepa*.

4. Scape terete, not angular, umbels erect, with bulblets, ovulary not crested. *A. canadense*.

4. Scape angular, umbels nodding without bulblets, ovulary and capsule crested. *A. cernuum*.

1. **Allium tricoccum** Ait. Wild Leek. An herb with clustered ovoid bulbs and with oblong lanceolate leaves, withering before flowering time. Leaves 6-12 in. long; tapering into a long petiole; scape 4-6 in. tall; umbels bracteolate, many flowered, erect; flowers white; perianth segments oblong, of about the same length as the filaments; capsule 3-lobed. In woods. West central part of the state to Franklin and Delaware. Also in Lorain, Cuyahoga and Medina.

2. **Allium vineale** L. Field Garlic. A slender herb with a stem 1-3 feet high sheathed by the bases of the leaves below the

middle. Leaves terete and hollow, slender, channeled above; umbels many-flowered, erect, bulbiferous; flowers white; perianth segments obtuse; capsule deeply three-lobed. Franklin and Harrison.

3. **Allium cepa** L. Common Onion. Scape exceeding the leaves; bulb scaly; leaves hollow, sometimes terete, usually broader than thick; flowers white. Sometimes persistent.

4. **Allium canadense** L. Meadow Garlic. Scape 12 in. high, terete, bulb small; leaves basal or nearly so, narrowly linear, slightly convex beneath; umbels bulbiferous; flowers pink or white; perianth segments narrowly lanceolate. General.

5. **Allium cernuum** Roth. Nodding Onion. Bulbs narrowed into a neck; leaves linear, flattened and slightly keeled, 1 ft. long; scape slightly ridged, 1-2 feet tall, bearing a loose or drooping few-to-many-flowered umbel; flowers rose-colored, to purple; capsule 6-crested. General.

6. **Quamasia** Raf. Wild Hyacinth.

Bulbous herbs with linear leaves and a terminal inflorescence of rather large, blue, purple or white flowers. Perianth slightly irregular of 6 blue or purple, spreading 3 to 7 nerved segments; stamens united with the bases of the segments; anthers versatile, introrse; capsule oval.

1. **Quamasia hyacinthina** (Raf.) Britt. Wild Hyacinth. Scape 6-28 in. tall; leaves keeled; raceme elongated; bracts longer than the pedicels; flowers pale blue; 3 nerved. General, but rare in eastern Ohio.

7. **Ornithogalum** L. Star-of-Bethlehem.

Bulbous herbs with narrow, basal, fleshy leaves. Inflorescence in a terminal, bracted, corymb or raceme of white, yellowish or greenish flowers; anthers introrse and versatile; stigma three lobed or three ridged.

Ornithogalum umbellatum L. Star-of-Bethlehem. Bulbs ovoid, tufted; scape slender, 4-12 in. high; leaves narrow, dark green with lighter mid-rib; flowers in a simple raceme or corymb, erect or ascending; perianth segments white above and green and white below; stamens $\frac{1}{2}$ the length of the segments. Escaped from gardens. Montgomery, Miami, Gallia, Franklin and Auglaize.

8. **Muscari** Mill. Grape-hyacinth.

Low bulbous herbs, with basal, linear, fleshy leaves and small, usually blue (rarely pink or white) flowers, in a dense raceme. Perianth globular of united segments; stamens included; anthers introrse; style short.

1. **Muscari botryoides** (L.) Mill. Grape-hyacinth. Leaves linear, erect; flowers deep blue, pedicels shorter than the flowers. Montgomery, Lake.

9. **Aletris** L. Colic-root.

Perennial, smooth, stemless herbs, fibrous rooted with basal lanceolate leaves. Inflorescence a spike-like raceme; flowers small, bracted, white or yellow; perianth campanulate of six united, persistent segments; stamens united with the perianth; stigmas minutely 2-lobed; capsule ovoid.

Aletris farinosa L. Colic root. Scape 16-36 in. tall, slender, terete; basal leaves lanceolate or linear-lanceolate, acuminate at the tip, narrowed at the base, pale in color, 2-6 in. long; raceme 4-12 in. long or somewhat longer; flowers white or yellowish; style subulate; capsule ovoid, loculicidal above. Counties along Lake Erie.

*Melanthaceæ.*10. **Uvularia** L. Bellwort.

An erect, perennial herb from a root-stock. Stem leafy above and scale-bearing below; leaves alternate, perfoliate or sessile; flowers peduncled, drooping, solitary or occasionally in two's at the end of the branches; perianth narrow or bell-shaped; stamens 6, free, or united to the base of the perianth segments; anthers linear; capsule ovoid or obovoid, three angled.

1. Leaves sessile, not perfoliate. *U. sessilifolia*.
1. Leaves perfoliate. 2.
2. Perianth segments pubescent within, stamens shorter than the style, plants glaucous, leaves glabrous. *U. perfoliata*.
2. Perianth segments smooth within or nearly so, stamens longer than the style, plants not glaucous, leaves pubescent beneath. *U. grandiflora*.

1. **Uvularia sessilifolia** L. Sessile-leaf Bellwort. Glabrous herb with a slender stem and but one or two leaves below the fork. Leaves oblong or oblong-lanceolate, 1-5 in. long, thin, sessile, acute at each end, margins slightly rough, pale or glaucous beneath, flowers greenish yellow; perianth segments smooth; styles exceeding the stamens; anthers blunt; capsule narrowed at both ends, 1 in. long. Lucas, Cuyahoga, Summit, Mahoning, Gallia.

2. **Uvularia grandiflora** Sm. Large-flowered Bellwort. Stem stout, yellowish-green, not glaucous, naked or bearing 1 or 2 leaves below the fork; leaves perfoliate, oblong, oval or ovate, somewhat acuminate, whitish-pubescent beneath; perianth segments smooth within or nearly so; stamens exceeding the styles; capsule obtusely lobed. General

3. **Uvularia perfoliata** L. Perfoliate Bellwort. A slender plant 6-20 in. high, with 1-3 leaves below the fork. Leaves glaucous, oblong to ovate-lanceolate, acute; perianth segments pale yellow, pubescent within; stamens shorter than the style or equaling them; capsule obovoid, truncate, 3-angled with concave sides and grooved ridges. General.

11. **Melanthium** L. Bunch-flower.

Tall leafy, pubescent herbs, perennial from short root stocks. Leaves oval, lanceolate or linear; inflorescence a pyramidal panicle; flowers greenish, white or cream colored; perianth of spreading segments, clawed, filaments shorter than the divisions of the perianth, somewhat united to the perianth segments; anthers cordate or reniform; styles 3, subulate.

1. **Melanthium virginicum** L. Virginia Bunch-flower. Stem $1\frac{1}{2}$ -5 feet tall, rather slender; leaves linear, $\frac{1}{2}$ - $1\frac{1}{2}$ in. wide; divisions of the perianth ovate to oblong, clawed, the claw about one-third of the whole length of the segment. Richland, Wayne.

12. **Veratrum** L. False-hellebore.

Tall perennial herbs with short, poisonous rootstocks. Leaves broad and for the most part clasping; stem and inflorescence somewhat pubescent; inflorescence a terminal panicle or spike-like raceme; flowers greenish, yellowish or purple, bisporangiate or monocious on short pedicels; stamens free short and recurved.

1. Stem stout and very leafy toward the top, inflorescence spreading in a dense spike-like raceme, ovulary glabrous. *V. viride*.

1. Stem slender, leaves few, inflorescence in a narrow panicle, ovulary tomentose. *V. woodii*.

1. **Veratrum woodii** Robb. Wood's False-hellebore. Stem slender, sparingly leafy, 1-5 feet high; leaves oblanceolate, only the lowest clasping; panicle narrow; perianth greenish-purple, with entire segments; ovulary tomentose; capsule few-seeded. Auglaize county.

2. **Veratrum viride** Ait. American False-hellebore. Stem stout, very leafy at the top, 2-7 feet tall; leaves broadly oval, pointed; sheath clasping; inflorescence a dense, spreading spike-like raceme; perianth yellowish-green; segments twice as long as the stamens, ciliate serrulate; ovulary glabrous; capsule many-seeded. Ashtabula county.

13. **Zygadenus** Mx. Zygadene.

Erect perennial bulbous, glabrous herbs with rather large panicked, greenish-white flowers. Stems leafy; leaves linear; perianth segments separate or united below; stamens free from the perianth segments.

1. **Zygadenus elegans** Pursh. Glaucous zygadenus. Very glaucous, stem slender, $\frac{1}{2}$ -3 feet tall; leaves keeled; inflorescence sometimes one foot long; flowers greenish; perianth segments oval to obovate, obtuse, somewhat united. Champaign, Stark, Highland, Ottawa.

14. **Stenanthium** Kunth.

Erect, glabrous, bulbous, perennial herbs, with long grass-like, keeled leaves. Inflorescence of numerous small flowers, forming a long terminal panicle; perianth segments oblong or ovate, spreading; stamens somewhat shorter than the perianth; filaments subulate; anthers oblong.

1. **Stenanthium robustum** Wats. Stout *Stenanthium*. Stem stout, usually leafy, 3-5 ft. tall, leaves 1 ft. or more long; panicle dense, usually compound; flowers greenish or white; capsule ovoid-oblong, erect, with a short recurved beak. Fairfield.

15. **Chamaelirium** Willd.

Smooth herbs with erect stems, from bitter, tuberous, rootstocks bearing a spike like raceme of small, white, bractless flowers, diecious; carpellate plant more leafy than the staminate; leaves flat, lanceolate or oblanceolate, tapering into a petiole; perianth of 6, 1-nerved segments; carpellate flower with vestigial stamens.

1. **Chamaelirium luteum** (L.) Gr. *Chamaelirium*. Stem 1-4 feet high, the carpellate plant usually higher; basal leaves 2-8 in. long; capsule oblong. Sandusky, Erie, Cuyahoga, Summit, Medina, Wayne, Licking, Lawrence.

16. **Tofieldia** Huds.

Perennial herbs with short, erect or horizontal rootstocks, fibrous roots, and slender, erect, almost leafless stems. Leaves linear and clustered at the base; flowers bisporangiate in a terminal raceme, or rarely solitary, white or green; pedicels bracted; perianth segments oblong or obovate, persistent; stamens 6; anthers introrse; ovulary sessile, styles 3, recurved.

1. **Tofieldia glutinosa** (Mx.) Pers. Glutinous *Tofieldia*. Stem viciid, pubescent, 6-20 in. tall with 2-4 basal leaves; inflorescence a short raceme, three-eighths to one and one-fourth in. long, bearing small involucre bracts; flowers very small; perianth segments oblong or obtuse; capsule oblong. Stark, Champaign.

*Convallariatæ.*17. **Trillium** L.

Glabrous, erect, unbranched herbs, from short, rootstocks, with a whorl of 3 leaves at the summit of the stem. Perianth of 3 green, persistent sepals and 3 withering or deciduous, colored petals, ovulary 3 or 6 angled.

1. Flowers peduncled. 2.

1. Flowers sessile. 6.

2. Leaves sessile or subsessile. 3.

2. Leaves petioled; oval or ovate. 5.

3. Petals obovate or oblanceolate, white or pinkish, sometimes darker with age. *T. grandiflorum*. (1)
3. Petals ovate or lanceolate. 4.
4. Peduncles 1-4 in. long, erect or declined; petals spreading, flowers ill-scented; dark purple, pink or white. *T. erectum*. (2)
4. Peduncles usually less than 1 in. long, recurved beneath the leaves, petals recurved, white or pink. *T. cernuum*. (3)
5. Leaves acuminate, about 6 in. long; flowers pure white. *T. undulatum*. (4)
5. Leaves oval, obtuse or merely acute, small, flowers white with purple stripes at the bases. *T. nivale*. (5)
6. Leaves sessile, sepals erect or spreading. *T. sessile*. (6)
6. Leaves petioled, sepals reflexed. *T. recurvatum*. (7)

1. **Trillium grandiflorum** (Mx.) Salisb. Large-flowered Trillium. Leaves peduncled, somewhat rhombic-ovate; petals oblanceolate or obovate, white or pinkish, sometimes darker with age; stamens with stout filaments and usually exceeding the slender stigmas. General.

2. **Trillium erectum** L. Ill-scented Trillium. Leaves broadly rhombic, short acuminate; petals ovate or lanceolate, white, pink or deep purple; stamens exceeding the stout recurved stigmas; flowers ill-scented. General.

3. **Trillium cernuum** L. Nodding Trillium. Leaves broadly rhombic ovate; peduncle usually less than one in. long and recurved beneath the leaves; petals recurved, white or pinkish; filaments about equalling the anthers; stigma stout at the base, but tapering toward the apex. Auglaize, Champaign, Medina.

4. **Trillium undulatum** Willd. Painted Trillium. Leaves ovate and taper-pointed; petals ovate or oval-lanceolate, pointed and wavy, white with purple stripes. Ashtabula county.

5. **Trillium nivale** Ridd. Early Trillium. Small, 2-4 in. high. Leaves oval or ovate, obtuse; petals oblong, obtuse, white, scarcely wavy; styles long and slender. Miami, Clark, Greene, Franklin.

6. **Trillium sessile** L. Sessile Trillium. Leaves sessile and usually mottled; flowers sessile; sepals spreading or erect, narrowly lanceolate or oblanceolate, dark and dull purple, varying to greenish. General.

7. **Trillium recurvatum** Beck. Prairie Trillium. Leaves petioled and somewhat mottled, ovate, oblong or obovate; flowers sessile; sepals reflexed; petals clawed, dark purple. Auglaize, Hamilton.

18. **Medeola** L.

A slender, erect, unbranched herb, clothed with deciduous tomentum, arising from a tube-like rootstock and bearing two or three whorls of oblong-lanceolate leaves and a sessile umbel of small, recurved flowers. Perianth of 6 equal, recurved, greenish-yellow segments; stamen filaments slender; styles 3, recurved.

1. **Medeola virginiana** L. Indian Cucumber-root. 1-2½ feet high; the lower whorl of leaves sessile, acuminate, narrowed at the base, 3 to 5 nerved; umbel 2-9 flowered; perianth segments obtuse; berry dark purple. General.

19. **Streptopus** Mx. Twisted Stalk.

Branching herbs with thin, sessile, or clasping, alternate leaves. Flowers solitary or in two's, greenish, rose or purplish, small and nodding; peduncles bent or twisted at about the middle; perianth campanulate of 6 spreading or recurved segments, deciduous, stamen-filaments short; style slender.

1. **Streptopus amplexifolius** (L.) DC. Clasping-leaf twisted stalk. Plant 16-36 in. high, usually branching below the middle; leaves cordate clasping at the base, glabrous; berry oval. Reported for Ohio.

20. **Disporum** Salisb.

Herbs with slender root stocks and branching stems. Leaves alternate, sessile or clasping; flowers terminal, nodding, solitary or in simple umbels, white or greenish-yellow; perianth of narrow, deciduous, segments; anthers extrorse; style slender; berry oval or ovoid.

1. **Disporum lanuginosum** (Mx.) Nich. Hairy Disporum. Pubescent herbs with ovate-lanceolate or oblong-lanceolate leaves, 2-4 in. long, long acuminate at the apex and rounded at the base. Flowers solitary, or in two's or three's, greenish, ½-¾ in. long, campanulate, glabrous, style slender; berry oval, red. In woods. Huron, Lorain, Cuyahoga, Ashtabula, Medina, Columbiana, Morrow, Perry, Richland, Wayne, Adams.

21. **Salomonias** Heist. Solomon's Seal.

Herbs with scarred root-stocks and simple aerial stems, scaly below and leafy above, the leaves sessile and alternate in ours. Flowers usually greenish, axillary, drooping, peduncled, solitary or umbellate; pedicels jointed at the base; perianth 6-lobed; stamens included, united with the perianth; styles slender; fruit a dark blue berry with a bloom.

1. Plants glabrous throughout; filaments smooth, flowers usually clustered.

S. commutata.

1. Leaves pubescent beneath; filaments roughened, flowers usually in two's. *S. biflora.*

1. **Salomonias commutata** (R. & S.) Brit. Smooth Solomon's-seal. A glabrous herb, 1-8 ft. high. Leaves rounded and sometimes clasping at the base; peduncle 1-8 flowered, glabrous; flowers ½-¾ in. long. In moist woods and along streams. General.

2. **Salomonias biflora** (Walt.) Britt. Hairy Solomon's-seal. A slender herb 8 in.-3 ft. high with glabrous stem. Leaves acute or acuminate at the apex, often obtuse at the base, pubescent (especially on the veins) beneath, glabrous above; peduncles commonly 2-flowered, sometimes 1-4 flowered; flowers $\frac{1}{4}$ - $\frac{1}{2}$ inch long. In woods and thickets. General.

22. **Vagnera** Adans. False Solomon's Seal.

Herbs with stems scaly below and leafy above. Leaves alternate, short petioled or sessile; inflorescence a terminal raceme or panicle; flowers small, white or greenish; stamens united with the base of the segments; anthers introrse; fruit a globular berry; seeds 1 or 2.

1. Flowers numerous and paniced. *V. racemosa*.
1. Flowers few and racemose. 2.
2. Leaves numerous. *V. stellata*.
2. Leaves 2-4. *V. trifolia*.

1. **Vagnera racemosa** (L.) Mor. Paniced False Solomon's-seal. Herbs with fleshy root-stocks and angled, leafy stems 1-3 ft. high. Leaves oblong-lanceolate, or oval, sessile or short-petioled, $2\frac{3}{4}$ -6 in. long, acuminate, finely pubescent beneath, margins ciliate; panicle dense, peduncled; perianth segments oblong; fruit an aromatic red berry speckled with purple. In moist woods and thickets. General.

2. **Vagnera stellata** (L.) Mor. Stellate False Solomon's-seal. A leafy herb 8-20 in. high with a stout fleshy rootstock. Stems glabrous; leaves oblong-lanceolate or lanceolate, sessile or clasping, minutely pubescent beneath; inflorescence a raceme $\frac{3}{4}$ -2 in. long, several-flowered; berry reddish or green striped with black. In moist soil. General.

3. **Vagnera trifolia** (L.) Mor. Three-leaf False Solomon's-seal. A glabrous herb with slender root-stocks usually with 3, sometimes 2-4 leaves. Leaves oblong or oblong-lanceolate, sessile, acute or acuminate at the apex, narrowed at the base; inflorescence a few flowered paniced raceme, perianth segments obtuse or somewhat reflexed; berry dark red. In bogs and wet places. Fulton, Lorain.

23. **Unifolium** Adans. False Lily-of-the-valley.

Low herbs with slender rootstocks; simple, few-leaved stems and small white flowers in a small, terminal raceme. Perianth of separate, spreading segments; stamens 4, united with the base of the segments; ovary sessile, 2-locular, berry 1-2 seeded.

1. **Unifolium canadense** (Desf.) Greene. False Lily-of-the-valley. Herbs 2-7 in. high with slender stems, bearing 1-3, usually 2, leaves. Leaves ovate, ovate-lanceolate or cordate,

sessile or short-petioled; raceme many-flowered; perianth segments becoming reflexed; fruit a speckled, pale-red berry. In moist woods and thickets. General.

24. *Clintonia* Raf.

Herbs somewhat pubescent with slender root-stocks and erect simple scapes and broad, petioled leaves. Inflorescence an umbel of bractless flowers; perianth segments equal or nearly so; stamens united with the perianth; ovulary bi- or tri-locular; fruit a globose or oval berry.

1. Umbel 3-6 flowered, perianth $\frac{1}{2}$ - $\frac{3}{4}$ in. long, greenish-yellow.

C. borealis.

1. Umbel many flowered, perianth $\frac{1}{4}$ in. long or less than $\frac{1}{2}$ in. long, white speckled. *C. umbellulata*.

1. ***Clintonia borealis*** (Ait.) Raf. Yellow Clintonia. Leaves oval, thin, ciliate, short-acuminate; inflorescence 3-6-flowered; stamens as long as the perianth; ovulary bilocular; berry oval. In moist woods and thickets. Ashtabula County.

2. ***Clintonia umbellulata*** (Mx) Torr. White Clintonia. Herbs with scape 8-18 in. high. Leaves 2-5, oblong, oblanceolate or obovate, acute or cuspidate, ciliate; inflorescence a many-flowered umbel; pedicels pubescent; flowers white, sometimes dotted with purple; ovulary 2-locular; fruit a few-seeded, globose berry. In woods. Harrison, Portage, Wayne.

25. *Convallaria* L. Lily-of-the-valley.

A low perennial with 1 or 2 leaves with sheathing petioles. Scape bearing a one sided raceme of white, rarely pinkish, fragrant, nodding flowers, perianth of 6 united segments; stamens united with the perianth; filaments short, anthers introrse; fruit a berry.

1. ***Convallaria majalis*** L. Lily-of-the-valley. Scape 4-10 in. high, shorter than the leaves and scaly near the base. Escaped from cultivation in Franklin County.

26. *Asparagus* L. Asparagus.

Stem at first simple, fleshy, scaly and at length becoming much branched and bearing phylloclades, the whole having a plume-like appearance. Flowers small, solitary, umbelled or racemed; perianth segments alike, separate or slightly united at the base; anthers introrse; ovulary sessile, trilocular; styles short; berry globose.

1. ***Asparagus officinalis*** L. Asparagus. Young stems thick and edible, but later developing into a plume-like branch. Root-stocks much branched; leaves reduced to scales and branchlets reduced to phylloclades; flowers mostly solitary and drooping at the nodes; perianth campanulate; berry red. Escaped from cultivation along road-sides, salt marshes and fields. General.

SMILACEAE. Smilax Family.

Mostly vines with woody or herbaceous often prickly stems. Leaves alternate, netted-veined, several nerved, petioled; petioles sheathing, bearing tendrils, persistent after the fall of the leaf; flowers small, greenish, diecious, in umbels in the axils of the leaves; perianth of 6 segments; stamens 6; ovulary trilocular; style short or none; fruit a berry; seeds 1-6 with much endosperm; embryo small.

Smilax L. Smilax.

Usually twining or climbing herbs with tendrils from the petioles. Lower leaves reduced to scales; flowers actinomorphic; perianth segments distinct, deciduous, the carpellate flowers with vestigial stamens; berry black, red or purple or rarely white.

1. Aerial stems herbaceous, dying down each year, flowers carrion-scented, berries blue-black with a bloom. 2.
1. Aerial stem woody, often prickly. 4.
2. Plants erect, mostly without tendrils. *S. ecirrhata*.
2. Plants, with tendrils, climbing, without prickles. 3.
3. Leaves smooth on both sides, peduncles very long. *S. herbacea*.
3. Leaves sparingly to densely puberulent on the veins beneath. *S. pulverulenta*.
4. Leaves green, not glaucous. 5.
4. Leaves very glaucous; peduncles, $\frac{1}{2}$ -1 in. long, usually not much longer than the petioles. *S. glauca*.
5. Peduncle about 2 in. long, leaves usually 7-9 nerved. *S. pseudo-china*.
5. Peduncle 1- $\frac{1}{2}$ in. long, leaves usually 7-nerved. *S. hispida*.
5. Peduncle usually less than $\frac{1}{2}$ in. long, about as long as the petiole, leaves usually 5-nerved. *S. rotundifolia*.

1. **Smilax ecirrhata** (Engl.) Wats. Upright Smilax. A glabrous, erect herb with the leaves often whorled at the top. Leaves ovate, rounded or cordate at the base, 5-9 nerved, somewhat pubescent beneath. In dry soil. Erie, Wood, Preble, Warren, Clinton, Brown, Fairfield, Hardin.

2. **Smilax herbacea** L. Common Carrion-flower. An unarmed, glabrous herb more or less climbing. Leaves ovate, rounded or lanceolate, acute or acuminate at the apex, obtuse or cordate at the base, 7-9-nerved; peduncles 6-10 times as long as the petiole, flattened, inflorescence a many-flowered umbel; flowers carrion-scented; fruit a blue-black berry. In woods or thickets. General.

3. **Smilax pulverulenta** Mx. Pubescent Carrion-flower. Similar to the preceding except that the undersides of the leaves are pubescent, especially on the veins. Williams, Fulton, Ottawa, Erie, Seneca, Cuyahoga, Hardin, Auglaize, Fayette, Montgomery.

4. **Smilax pseudo-china** L. Long-stalked Greenbrier. A glabrous climbing woody vine, commonly covered with numerous slender prickles. Branches more or less angled; petioles 1-1½ in. long; leaves ovate, abruptly acute at the apex, subcordate at the base, usually 1-nerved; with 12-40 flowers; fruit a black berry. In thickets. General.

5. **Smilax glauca** Walt. Glaucous Greenbrier. A climbing woody vine with terete stem and four-angled branches and glaucous leaves. Stem often prickly; peduncle ½-1 in. long; leaves ovate, acute or cuspidate at the apex, sometimes cordate at the base, five-nerved; umbel 6-12 flowered; fruit a blue-black berry. In dry, sandy soil. General, but more abundant in the south.

6. **Smilax rotundifolia** L. Round-leaf Greenbrier. A glabrous woody climber with a terete, woody stem and a square branch usually prickly. Petioles less than ½ in. long; leaves thick, shining when mature, acute or acuminate at the apex, obtuse or cordate at the base, entire or very slightly denticulate, 5 nerved; peduncles flattened; umbel 6-25-flowered; fruit a black berry. In woods and thickets. Cuyahoga, Belmont, Hocking, Fairfield, Licking, Lorain.

PONTEDERIAEAE. Pickerel-weed Family.

Perennial, aquatic herbs with broad, petioled leaves or long, grass-like leaves. Flowers bisporangiate, showing some zygomorphy, solitary or spiked with a spathe; perianth of six united segments; stamens 6 or 3, united with the perianth; ovulary trilocular or unilocular; stigma terminal; fruit a many seeded capsule; endosperm of the seed copious, mealy.

1. Spike many-flowered, with a spathe-like bract, perianth two-lipped, stamens 6. *Pontederia*. (1)
1. Inflorescence one to several-flowered, perianth with a slender tube, perianth segments about equal, stamens 3. *Heteranthera*. (2)

1. **Pontederia** L. Pickerel-weed.

Herbs with thick leaves, long sheathing petioles and horizontal rootstock. Inflorescence a spike with numerous, ephemeral, blue flowers; perianth two lipped; stamens 6, united with the perianth; ovulary trilocular, 2 locules without ovules.

1. **Pontederia cordata** L. Pickerel weed. A rather stout, erect herb with ovate or cordate, sagittate leaves, with apex and basal lobes obtuse, the sheathing petiole often having long appendages; spathe and inflorescence pubescent; flowers blue, the upper lobe having two yellow spots on the middle segment. Borders of ponds and streams. Erie, Cuyahoga, Geauga, Summit, Portage, Wayne, Lucas, Fulton, Defiance, Licking, Perry.

Pontederia cordatalancifolia (Muhl.) Mor. Similar to the preceding but with lanceolate leaves, rounded or narrowed at the base. Summit County.

2. **Heteranthera** R. & P.

Aquatic herbs with creeping, ascending or floating stems with petioled cordate, ovate, oval or reniform leaves; or with grass-like leaves.

1. **Heteranthera dubia** (Jacq.) Mac. M. Water Stargrass. A slender forked herb, often rooting at the nodes. Leaves flat, elongated, acute, with thin sheathes and stipule-like appendages; spathe 1-2 flowered, flowers light yellow, stigma lobed, fruit a unilocular capsule. Growing in still water. Rather general.

COMMELINACEAE. Spiderwort Family.

Perennial or annual leafy herbs. Inflorescence an umbel-like cyme of bisporangiate, showy, flowers, subtended by spathe-like or leafy bracts; sepals 3, persistent; petals 3, membranous, dequescent; stamens 6, sometimes 3 of them sterile; ovulary bi- or tri-locular; capsule loculicidal; endosperm copious and mealy.

1. Bracts leaf-like, stamens 6, petals all alike. *Tradescantia*. (1)
1. Bracts spathe-like stamens 3. *Commelina*. (2)

1. **Tradescantia** L. Spiderwort.

Herbs with simple or branched stems, somewhat mucilaginous; leaves rather narrow and elongated; inflorescence in terminal or axillary cymes subtended by bracts; perianth of 3 sepals and 3 petals; stamens 6, usually all alike, bearded; ovulary tri-locular; capsule loculocidal.

1. Leaves linear, 12-50 times longer than broad, stems elongated. 2.
1. Leaves lanceolate, 2-10 times longer than broad, and zigzag. *T. pilosa*.
2. Foliage glaucous pedicle glabrous, sepals often with a tuft of hairs at the apex. *T. reflexa*.
2. Foliage bright green, peduncles and sepals villous with non-glandular hairs. *T. virginiana*.

1. **Tradescantia reflexa** Raf. Reflexed Spiderwort. A slender, glabrous, glaucous herb. Leaves narrow, linear-attenuate, strongly involute, rather rigid with sheaths; inflorescence a densely-flowered cyme; 2 involucre bracts reflexed; sepals glabrous except the tips which are tipped with tufts of hairs; petals blue. In sandy or loamy soil. Ashtabula, Erie, Mahoning, Richland, Coshocton, Licking, Franklin, Auglaize.

2. **Tradescantia virginiana** L. Virginia Spiderwort. A stout bright-green herb, glabrous or slightly pubescent; leaves nearly flat, linear-lanceolate, long acuminate; bracts leaf-like, inflorescence usually a solitary, terminal cyme; pedicels and sepals villous; petals blue or purple, showy. In rich soil in woods and along railroads. General as far north as Auglaize and Stark.



3. **Tradescantia pilosa** Lehm. Zigzag Spiderwort. A stout herb, commonly flexuous, often branched, more or less puberulent or short-pilose; leaves broadly lanceolate, acuminate at the apex, darker green above than below; pedicels and calyx pubescent and more or less glandular, rarely somewhat glabrous; petal lilac-blue. In thickets and on shaded hillsides. Montgomery, Clermont, Hamilton.

2. **Commelina** L. Day-flower.

Succulent, branching herbs, with short-petioled or sessile leaves. Inflorescence a sessile cyme subtended by spathe-like bracts; sepals slightly united, of unequal size; petals unequal, 2 large and one small; stamens 3 or 2 fertile and 3 or 4 sterile.

1. **Commelina virginica** L. Virginia Day-flower. A branched somewhat pubescent or glabrous herb. Leaves lanceolate, or linear-lanceolate, acuminate at the base; sheathes inflated, often pubescent; inflorescence a cyme surrounded by 2 bracts; corolla showy. In moist soil. Montgomery, Clermont, Lake.

JUNCACEAE. Rush Family.

Perennial or sometimes annual, grass-like, usually tufted herbs. Leaves with sheathes either open or closed; inflorescence a panicle, cyme, corymb, or umbel, spike or head, or rarely, flowers single; flowers small, regular, with or without bracts; perianth of 6 glumaceous segments; stamens 6 or 3 or rarely 5 or 4; carpels 3; fruit a loculicidal capsule, seeds many or 3; endosperm fleshy.

1. Leaf-sheathes open, seeds many, plants never hairy. *Juncus*. (1)

1. Leaf-sheathes closed, seeds three, plants usually hairy. *Juncoides*. (2)

1. **Juncus** L. Rush.

Usually perennial herbs with leaf-bearing stems, and open leaf sheathes. Leaves grass-like or channeled; inflorescence a panicle or corymb, often unilateral, or congested in heads; stamens 6 or 3, ovulary unilocular or trilocular; seeds several or many, sometimes caudate. Commonly found in swamp habitats.

Synopsis.

- I. Inflorescence apparently lateral.
 - 1. Flowers bracteolate, inserted singly.
 - J. effusus.*
 - J. balticus.*
 - 2. Flowers not bracteolate, in heads.
 - (No Ohio species.)
- II. Inflorescence terminal.
 - 1. Leaf blades flat or channeled, not septate.
 - a. Flowers bracteolate, never in true heads, sometimes clustered.
 - J. dudleyi.*
 - J. tenuis.*
 - J. bufonius.*
 - J. monostichus.*
 - b. Flowers not bracteolate, in true heads.
 - J. articulatus.*
 - J. marginatus.*
 - 2. Leaf channeled or terete, hollow, with septa.
 - a. Leaf blades more or less channeled, septa usually imperfect, not externally evident. (No Ohio species.)
 - b. Leaf blade usually not channeled, septa perfect and usually evident externally.
 - (a). stamens 6.
 - J. richardsonianus.*
 - J. articulatus.*
 - J. torreyi.*
 - J. nodosus.*
 - (b). stamens 3.
 - J. brachecephalus.*
 - J. acuminatus.*
 - J. canadensis.*
 - J. scirpoides.*

Key.

- 1. Inflorescence apparently lateral. 2.
- 1. Inflorescence terminal. 3.
- 2. Perianth parts greenish, turning straw-colored, stamens 3. *J. effusus.*
- 2. Perianth parts with a chestnut strip on each side of the midrib, stamens 6. *J. balticus.*
- 3. Leaf blade flat or channeled, not septate. 4.
- 3. Leaf-blade channeled or terete, hollow, with septa. 9.
- 4. Flowers bracteolate, never in true heads, sometimes clustered. 5.
- 4. Flowers not bracteolate, in true heads. 8.
- 5. Auricles at the summit of the sheathe cartilaginous and darker than the stem, not extended conspicuously beyond the point of insertion. *J. dudleyi.*
- 5. Auricles at the summit of the sheathes scarious. 6.
- 6. Inflorescence with 3-12 second flowers along the usually dichotomously branched stem. *J. monostichus.*
- 6. Inflorescence 2-4-flowered, scattered along the dichotomous branches or sometimes aggregate at the top but not second. 7.
- 7. Bracts exceeding the inflorescence, plants perennial, flowers usually in clusters of 3-4. *J. tenuis.*
- 7. Bracts shorter than the inflorescence, plants annual, flowers scattered singly along the usually dichotomous branches. *J. bufonius.*

8. Heads of the inflorescence 5-15, each head usually 5-10 flowered, plants less than 20 in. high. *J. marginatus*.
8. Heads of the inflorescence usually 20-100, each head 2-5 flowered, plants over 20 in. high. *J. aristulatus*.
9. Glomerules loosely few-flowered, hemispherical. 10.
9. Glomerules densely many-flowered, spherical. 13.
10. Stamens 6, or if 3 the glomerules only 3-7 flowered; capsule longer than the perianth segments. 11.
10. Stamens 3, glomerule 5-many flowered, capsule shorter than the perianth segments. *J. acuminatus*.
11. Stamens 6, seeds not with caudate tips. 12.
11. Stamens 3, seeds with caudate tips. *J. brachycephalus*.
12. Plants articulate, sepals acuminate, flowers brownish, capsule gradually tapering to a mucronate tip. *J. articulatus*.
12. Plants not articulate, sepals blunt, often mucronate-tipped, flowers straw-colored, capsule acute, or obtuse with a short tip.
J. richardsonianus.
13. Involucral leaf usually much exceeding the inflorescence stamens 6. 14.
13. Involucral leaf usually shorter than the inflorescence, or if exceeding the inflorescence then not over one inch long, stamens 3. 15.
14. Sepals exceeding the petals, leaf-blades abruptly divergent from the stem. *J. torreyi*.
14. Sepals shorter than the petals, leaf-blade erect. *J. nodosus*.
15. Capsule obtuse or acute at the apex, sometimes mucronate but not prolonged into a beak; seeds with definite caudate tips.
J. canadensis.
15. Capsule tapering evenly into a prominent subulate beak; seeds blunt or merely pointed, not caudate. *J. scirpoides*.

1. **Juncus effusus** L. Common Rush. An herb with a branching root-stock, lateral inflorescence and non-septate leaves. Basal leaves reduced, scapes soft and pliant; inflorescence a diffused, much-branched cyme; flowers small and greenish; stamens 3; style short; capsule trilocular; seeds small. Marshy ground. General and common.

2. **Juncus balticus** Willd. Baltic Rush. Scape rigid; inflorescence a lateral, loose or dense cyme; perianth parts brown with a green mid-rib and hyalin margins; capsule about as long as the perianth, brown mucronate, trilocular. On sandy soil. Erie County.

3. **Juncus dudleyi** Weig. Dudley's Rush. Inflorescence a terminal cyme subtended by bractlets; leaves non-septate; leaf-sheath covering $\frac{1}{4}$ of the stem; auricles dark, cartilaginous not conspicuously extended beyond the point of insertion; seeds blunt. Montgomery, Clinton, Champaign, Licking, Delaware, Tuscarawas.

4. **Juncus tenuis** Willd. Slender Rush. Inflorescence terminal, subtended by bracts; flowers subtended by bractlets; sheaths covering $\frac{1}{4}$ of the stem; leaves flat, non-septate, becoming involute in age; auricles scarious, conspicuously extended beyond the point of insertion. Seeds blunt. General.

5. **Juncus bufonius** L. Toad Rush. An annual herb, 8 in. high, with terminal inflorescence and non-septate leaves. Flowers scattered singly along the one sided and usually dichotomously branched inflorescence; leaf blade flat; stamens 6 or 3; capsule trilocular. Williams, Lucas, Lorain, Licking.

6. **Juncus monostichus** Barth. One-ranked Rush. Plant 12-20 in. high; culms compressed; inflorescence terminal; leaves basal and involute in drying; auricles scarious; inflorescence exceeded by the bract; flowers secund. Trumbull County.

7. **Juncus aristulatus** Mx. Small-headed Grass-leaf Rush. Inflorescence terminal, usually composed of from 10-20 heads, each head of from 2-5 flowers; stamens exerted and persistent in the fruit; capsule rarely exceeding the calyx. Fairfield, Summit.

8. **Juncus marginatus** Rostle. Grass-leaf Rush. Inflorescence terminal, of 2-20 heads, each with 5-10 flowers; flowers not subtended by bractlets; capsule rarely exceeding the calyx; stamens exerted and persistent in the fruit. Cuyahoga County.

9. **Juncus richardsonianus** Schult. Richardson's Rush. Inflorescence in terminal heads with fascicles of leaves; leaves septate, upper cauline leaves with blades; sepals blunt; stamens 6; seeds blunt. Cuyahoga County.

10. **Juncus articulatus** L. Jointed Rush. Leaves septate, upper cauline leaves with blades; inflorescence in terminal, spherical glomerules; sepals acuminate; stamens 6; seeds blunt. Cuyahoga County.

11. **Juncus torreyi** Cov. Torrey's Rush. Leaves septate, upper cauline leaves with blades; inflorescence in terminal, spherical glomerules; petals shorter than the sepals; stamens 6; seeds blunt. Cuyahoga, Adams, Madison, Wood and Erie.

12. **Juncus nodosus** L. Knotted Rush. Leaves septate, upper cauline leaves with a blade; inflorescence in terminal, spherical glomerules without fascicles of leaves; involucre exceeding the inflorescence; sepals subulate; stamens 6; petals equaling or exceeding the sepals. Madison, Cuyahoga, Erie, Franklin.

13. **Juncus brachycephalus** Engelm. Small-headed Rush. Leaves septate, with well developed blades; inflorescence in terminal, 2-5 flowered heads; stamens 3; seeds with short caudate tips. Erie, Cuyahoga, Champaign, Franklin, Madison.

14. **Juncus acuminatus** Mx. Sharp-fruited Rush. Leaves septate, blades of the lower leaves 4-8 in. long; inflorescence terminal, branches of 5-50 heads, rarely more or less, heads 3-20 flowered; petals and sepals nearly equal; stamens 3; seeds tipped at each end. Ashtabula, Lake, Lorain, Cuyahoga, Huron, Portage, Tuscarawas, Knox, Union, Licking, Auglaize, Carroll, Champaign, Fairfield, Adams, Brown.

15. **Juncus canadensis** J. Gay. Canada Rush. Leaves nodose, basal leaves disappearing before flowering time; sheathes with auricles, inflorescence in terminal, crowded heads, with 5-50 flowers to the head; stamens 3; capsule mucronate, reddish brown, longer than the perianth; seeds with a definite tail. Cuyahoga, Licking, Auglaize, Madison, Geauga.

16. **Juncus scirpoides** Lam. Scirpus-like Rush. Leaves septate, blade of the uppermost leaf longer than the sheath; inflorescence in densely flowered heads; stamens 3; capsule attenuate, exceeding the calyx; seeds blunt. Erie County.

2. **Juncoides** Adans.

Perennial plants, glabrous or hairy, with grass-like leaves and closed leaf sheathes. Inflorescence an umbel, panicle or corymb; flowers with bractlets; stamens 6; ovulary unilocular, three-seeded.

1. Flowers occurring singly or in twos at the ends of the branches of the inflorescence. *J. pilosum*.
2. Flowers occurring in glomerules. *J. campestre*.

1. **Juncoides pilosum** (L.) Ktz. Hairy Wood-rush. A tufted herb, often stoloniferous. Stems erect, 2-4 leaved, 6-12 in. high; leaf blades flat, acuminate; inflorescence an umbel, each pedicel 1 or 2 flowered; perianth brown with hyalin margins; seeds hooked. Lucas, Cuyahoga, Trumbull, Mahoning, Hocking.

2. **Juncoides campestre** (L.) Ktz. Common Wood-rush. Tufted herb, 4-20 in high; stems 2-4 leaved; leaf blades blunt, pubescent, inflorescence an umbel, lower bracts leaf-like, acuminate; flowers brown, capsule obovoid or broadly oblong. In woods. General.

XYRIDACEAE. Yellow-eyed-grass Family.

Tufted, rush-like herbs with narrow, two-ranked leaves and leafless scapes. Flowers in heads, bisporangiate, mostly yellow, solitary and sessile in the axils of bracts; petals 3; sepals 3, unequal, one large and membranous and 2 small and keeled; stamens 6 or 3; ovulary tri-or unilocular; ovules orthotropous; fruit a capsule; endosperm mealy.

Xyris L. Yellow-eyed-grass.

Perennial herbs with the flowers single in the axils of coriaceous scale-like bracts, which together form a head. Stamens 3 fertile and 3 sterile; capsule unilocular, many seeded.

1. **Xyris flexuosa** Muhl. Slender Yellow-eyed-grass. An herb 5-20 in. high, with a slender, straight or slightly twisted scape. Leaves flat, becoming twisted; inflorescence globose or oblong or obtuse; lateral sepals linear and fringed with short hairs on the wingless keel. In bogs. Portage, Geauga.

ERIOCAULACEAE. Pipewort Family.

Stemless or short-stemmed, perennial or annual, bog or aquatic herbs, with fibrous or spongy roots, monecious or diecious; scape long, bearing a solitary terminal head of small monosporangiate flowers, each borne in the axil of a scarious bract; perianth segments 6 or 3, stamens 6 or 3; ovulary 2 or 3-locular; fruit a loculo-cidal capsule; seeds orthotropous; endosperm mealy.

Eriocaulon L. Pipewort.

Stemless or short-stemmed, monecious herbs with erect scapes and short, spreading, acuminate, parallel-veined leaves. Inflorescence a tomentose head, white to almost black, staminate flowers with 6-4 stamens opposite the perianth segments, ovulary vestigial, carpellate flowers having a stalked or sessile ovulary with no stamens; fruit a capsule.

1. **Eriocaulon septangulare** With. Seven-angled Pipewort. Monecious aquatic herbs with almost no stem from which arise soft, awl-shaped, pellucid leaves and a weak, twisted scape somewhat seven-angled. Involucral bracts glabrous or the innermost ones bearded to the apex, shorter than the flower; outer flowers of the head usually staminate; carpellate flowers generally smaller than the staminate; perianth segments white, bearded. In still water or on shores. No known specimens from Ohio.